

THAT WHICH IS CLAIMED IS:

1. An integrated successive approximations analog to digital converter for sampling, converting and storing numerical values of a certain parameter represented by an analog signal applied to an input of the converter, comprising means for detecting eventual faults or malfunctions in the electrical connections to said analog signal to an analog input pad of the integrated circuit of the converter, characterized in that said means for detecting comprise

means for pre-sampling and converting at least a known internal analog voltage reference of the integrated circuit and for storing its converted numerical value of reference;

means for generating a fault signal when the converted numerical value of the sampled analog signal applied on said analog input pad of the integrated circuit coincides with said converted numerical value of reference.

2. The converter according to claim 1, characterized in that said means for pre-sampling and converting comprise a biasing stage of the input node of the converter for biasing said node with an internal analog reference voltage corresponding to one or the other end scale value of the converter and at least a pair of path selection switches coupling the input node of the converter either to the output of said biasing stage during a pre-sampling phase or to said analog input pad of the integrated circuit during a successive operating phase of the converter, driven by the logic control circuitry of the converter.

3. The converter according to claim 2, characterized in that said means for generating a fault signal comprise a register in which to store said converted numerical reference value and a comparator receiving on a first input the numerical reference value stored in said register and on a second input the converted numerical value of the analog signal applied on said analog input pad of the integrated circuit for outputting a signal representative of a possible identity between the two numerical values and at least a pair of output paths selection switches of the converter for switching the output node of the converter to the input of said register during a pre-sampling phase and to said second input of the comparator during a successive working phase of the converter, driven in phase opposition by the logic control circuitry of the converter.

4. The converter according to claim 2, characterized in that said comparator is a two thresholds comparator defining a range of values comprised between said two thresholds that are evaluated as being identical to said converted numerical reference value.

5. The converter according to claim 3, characterized in that it further comprises a counter coupled to the output of said comparator for producing said fault signal when said comparator verifies identity between said two numerical input values for a certain number of successive samples of said analog input signal.

6. An auto-diagnostic method of possible electrical connection faults in a certain input channel of parameter values in the form of an analog signal applicable to an analog input pad of an integrated circuit comprising a successive approximations analog to digital converter for sampling, converting and storing numerical values of said parameter, comprising the steps of

performing a pre-sampling and conversion of at least a known internal analog voltage reference of the integrated circuit and storing its converted numerical value of reference;

generating a fault signal when the converted numerical value of said analog signal applied to said analog input pad of the integrated circuit coincides with the stored numerical reference value.

7. The method according to claim 6, characterized in that said coincidence with the pre-converted numerical reference value is established by defining a range of values between two comparison thresholds of the converted numerical value of the sampled analog signal applied to said input pad that verify a substantial coincidence with the pre-converted numerical reference value.